

WHAT IS CLAIMED IS:

1 ~~Sub B1~~ 1. A method for producing porous silicon, the method
2 comprising steps of:
3 depositing a thin discontinuous layer of metal on a Si surface;
4 etching the Si surface in a HF and oxidant solution, said etching
5 being conducted without external electrical bias.

1 ~~Sub C1~~ 2. The method according to claim 1, wherein said step of
2 etching is conducted in the absence of illumination.

1 3. The method according to claim 1, wherein said step of
2 etching is conducted in the presence of illumination..

1 4. The method according to claim 1, wherein said metal
2 comprises Pt.

1 5. The method according to claim 1, wherein said metal
2 comprises Au.

1 6. The method according to claim 1, wherein said metal
2 comprises Pd.

1 ~~Sub A2~~ 7. The method according to claim 1, wherein said metal
2 comprises a combination of metals selected from the group of Au, Pt and Pd.

1 ~~Sub C2~~ 8. The method according to claim 1, wherein said oxidant
2 comprises H₂O₂.

1 9. The method according to claim 1, wherein the thickness of
2 said metal is less than approximately 10nm.

1 10. The method according to claim 1, wherein said etching is
2 conducted for a time period between about 2 seconds and one hour.

1 ~~Sub B2~~ 11. A method for producing porous silicon, the method consisting
2 of the following steps.

3 depositing a thin discontinuous layer of metal on a Si surface;

4 etching the Si surface in a HF and oxidant solution for a period of
5 about two seconds up to 60 minutes, said etching being conducted without
6 external electrical bias.

1 *Sub C3* 12. The method according to claim 11, wherein said step of
2 etching is conducted in the absence of illumination.

1 13. The method according to claim 11, wherein said step of
2 etching is conducted in the presence of illumination.

1 14. The method according to claim 11, wherein said metal
2 comprises Pt.

1 15. The method according to claim 11, wherein said metal
2 comprises Au.

1 16. The method according to claim 11, wherein said metal
2 comprises Pd.

1 *Sub A3* 17. The method according to claim 11, wherein said metal
2 comprises a combination of metals selected from the group of Au, Pt and Pd.

1 *Sub C3* 18. The method according to claim 11, wherein said oxidant
2 comprises H₂O₂.

1 19. The method according to claim 11, wherein the thickness of
2 said metal is less than approximately 10nm.

1 20. The method according to claim 11, wherein said etching is
2 conducted for a time period between about 2 seconds and one hour.

1 *Sub B3* 21. A method for producing porous silicon, the method
2 comprising steps of:

3 depositing metal on a Si surface in a thickness sufficient to permit
4 nucleation that forms nanometer size metal particles and small enough to prevent
5 formation of a continuous metal layer;

6 etching the Si surface in a HF and oxidant solution for a period of
7 about two seconds up to 60 minutes, said etching being conducted without
8 external electrical bias.